



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

May 1, 2023

Mr. Brian Croyle, Environmental Specialist  
Montgomery County Public Schools  
Division of Sustainability and Compliance  
8301 Turkey Thicket Drive  
Gaithersburg, MD 20879

Ref: **Sampling for Asphalt Fumes and Hydrogen Sulfide Gas – 4/18/2023**  
Poolesville High School  
KCI Job No. 122302497

KCI Technologies Inc. (KCI) is submitting the following letter report detailing the findings of air sampling of Asphalt Fumes (benzene soluble fraction) and Hydrogen Sulfide gas at Poolesville High School located at 17501 W. Willard Rd. Poolesville, MD 20837 (subject site). Sampling was conducted by KCI's Industrial Hygienist, Mr. Tyler McCleaf, CSP, under the oversight of KCI's Certified Industrial Hygienist (CIH), Mr. Jonathan Coale on April 18, 2023.

Background:

At Poolesville High School, current renovations and construction has raised concerns from student parents. Students and faculty have voiced concerns related to an odor present in the school while the roofing work is occurring. The parents are concerned the students are being exposed to unsafe conditions related to the asphalt fumes being produced during the roofing installation. MCPS contacted KCI to assist them in collecting data on the school's occupants' potential exposure to fumes related to the roofing work being conducted.

Description of the Work Performed:

On April 18, 2023, KCI conducted air sampling for Asphalt Fumes (benzene soluble fraction) and Hydrogen Sulfide gas levels at Poolesville High School. The sampling of Asphalt Fumes (benzene soluble fraction) was done under method: Modified NIOSH 5042. This method will determine the total concentration of total particulate and the soluble fraction to which an individual is exposed. NIOSH has an adopted value of 5 mg/m<sup>3</sup> Threshold Limit Value (TLV) -Time-Weighted Average (TWA) for asphalt fumes. NIOSH's definition of TLV-TWA is the "concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, for a working lifetime without adverse effect". KCI also utilized a multi-gas meter to collect real time readings of hydrogen sulfide (H<sub>2</sub>S), carbon monoxide (CO), and oxygen (O<sub>2</sub>) levels in various locations throughout the building and exterior. Direct read data was performed to collect short term "grab" samples to determine if the gas was present and was not intended to collect exposure data.

During the time of the air sampling, construction was being conducted, asphalt smell was noted outside of the building. KCI placed six (6) sampling pumps set to approximately 1 liter per minute in locations pre-determined by MCPS. It is KCI's understanding that the sample locations selected by MCPS were where complaints were made from students. After all sampling pumps were placed, KCI took real time readings of the hydrogen sulfide levels at each of these locations every 30 minutes inside and every 30 minutes

outside. A sampling location map can be found in attachment A.

KCI conducted area sampling from approximately 0830 until 1430. Conditions during the sampling period were clear skies and 55°- 85°F. Winds were between 0 and 10mph from N, NW to S, SW.

After sampling, the cassettes were sealed, logged, bagged, and shipped as required to Galson Laboratories in East Syracuse, NY, where they were analyzed for Asphalt Fume (benzene soluble fraction) Modified NIOSH Method 5042. Galson Laboratories is accredited by the American Industrial Hygiene Association (#100324).

In addition to sampling, MCPS had the onsite IH conduct a review of the barriers between the construction site and entrances to the school and to recommend additional elements to help reduce cross contamination of asphalt roofing off gassing.

Results:

**Asphalt Fumes (Benzene Soluble Fraction)**

<b>Table 1 – Asphalt Fumes Sampling Summary</b>			
<b>Location</b>	<b>Sample Number</b>	<b>Concentration (mg/m<sup>3</sup>)</b>	<b>Above TLV-TWA?</b>
Media Center Hallway – Outside Room 37	PH – 01A	<0.28	No
Arts Hallway – Outside Room 44	PH – 02A	<0.28	No
Science Building 1 <sup>st</sup> Floor – Outside Room 184	PH – 03A	<0.28	No
Science Building 2 <sup>nd</sup> Floor – Outside Room 284	PH – 04A	<0.28	No
West End of Portables – (exterior)	PH – 05A	<0.28	No
Outside of Main Office (exterior)	PH – 06A	<0.28	No
Field Blank	PH – FB	N/A	N/A
Lab Blank	PH – LB	N/A	N/A

N/A: Not Applicable

Laboratory analysis results are included as Attachment B.

**Gas Meter Readings**

<b>Table 2 – Multi-Gas Meter Sampling Summary</b>			
<b>Time</b>	<b>Oxygen (O<sub>2</sub>)</b>	<b>Carbon Monoxide (CO)</b>	<b>Hydrogen Sulfide (H<sub>2</sub>S)</b>
830-835	20.8	0	0
900-905	20.8	0	0
940-945	20.8	0	0
1100-1105	20.8	0	0
1132-1137	20.8	0	0
1250-1255	20.8	0	0
1315-1320	20.8	0	0
1400-1405	20.8	0	0
1430-1435	20.8	0	0

## Olfactory Findings

During walkthroughs, KCI noted the following asphalt smells:

<b>Location</b>	<b>Findings</b>
Exterior Outside New Main Office	Strong Asphalt Smell
Exterior Between Main Building & Science/Tech Addition	Weak Asphalt Smell
Exterior By Portables	No Asphalt Smell
Main Lobby	No Asphalt Smell
Art Hallway	No Asphalt Smell
Auditorium Corridor	Strong Asphalt Smell
Gym Hallway	No Asphalt Smell
Science and Technology Addition	No Asphalt Smell

## Barrier Review

During the review of the barriers KCI noted the following:

1. Barrier outside auditorium, school side.
  - a. Poly covering door in disrepair, seams between barrier are not covered to prevent air movement.
  - b. Heavy asphalt smell present in corridor.
  - c. No H<sub>2</sub>S in corridor was detected.
2. Door between hallway to gym and locker rooms, school side:
  - a. Closed doors and only signs demarcating construction zone.
3. Door outside room 13, construction side:
  - a. Previous poly barrier was removed.
4. Door outside girls locker room, construction side:
  - a. No poly barrier erected.
5. Door outside boys locker room, construction side:
  - a. Poly barrier in disrepair.
6. Negative air enclosure, construction side outside auditorium lobby:
  - a. Two negative air machines were observed, one was unplugged and not working at time of barrier review.
  - b. Interior wall had some tape covering the seams but no poly barrier keeping out cross contamination.
  - c. No H<sub>2</sub>S detected in containment.

Photos of current barriers can be found in Attachment C.

## Recommendations

KCI was tasked with reviewing the barriers the construction contractor erected to dissuade occupants of the school from crossing into the construction zone and to deter cross contamination of asphalt roofing byproducts. The following recommendations concern upgrading the current barriers to help reduce cross contamination of asphalt roofing byproducts:

- KCI recommends all barriers between construction zone and school should be upgraded with two-layers of 6mm poly plastic sealed in place by duct tape or similar adhesion method. These recommendations should be applied to any construction zone / school entrance currently blocked for egress.
- For areas used as emergency exits, an additional two-layers of 6 mil poly will be applied to the door, the interior of the two layers will be cut vertically to allow movement through the emergency exit and the outer layer will only be adhered at the top allowing it to be moved aside in an emergency to gain access to the emergency exit, similar to the entrance to a 3-stage decontamination unit.
- Upon review of the barriers, it was noted a negative air enclosure was constructed and two negative air machines were present. KCI recommends applying critical barrier construction on the outside of the plywood enclosure to ensure negative pressure is gained within the containment, both negative air machines should be running during asphalt roof activities.
- KCI recommends that the construction contractor routinely check integrity of barriers applied to these egress routes and ensure negative air machines are operational during working hours and to fix deficiencies as soon as possible.

Conclusion:

In conclusion, the baseline sampling data determined airborne Asphalt Fumes concentrations were below the NIOSH TLV-TWA adopted value during the period of sampling. In addition, H<sub>2</sub>S and CO concentrations were not present or at concentrations below the gas meters detectable range. Oxygen levels were at the expected levels.

During sampling, asphalt roofing activities were being performed.

If you have questions or comments regarding this report, please contact me.

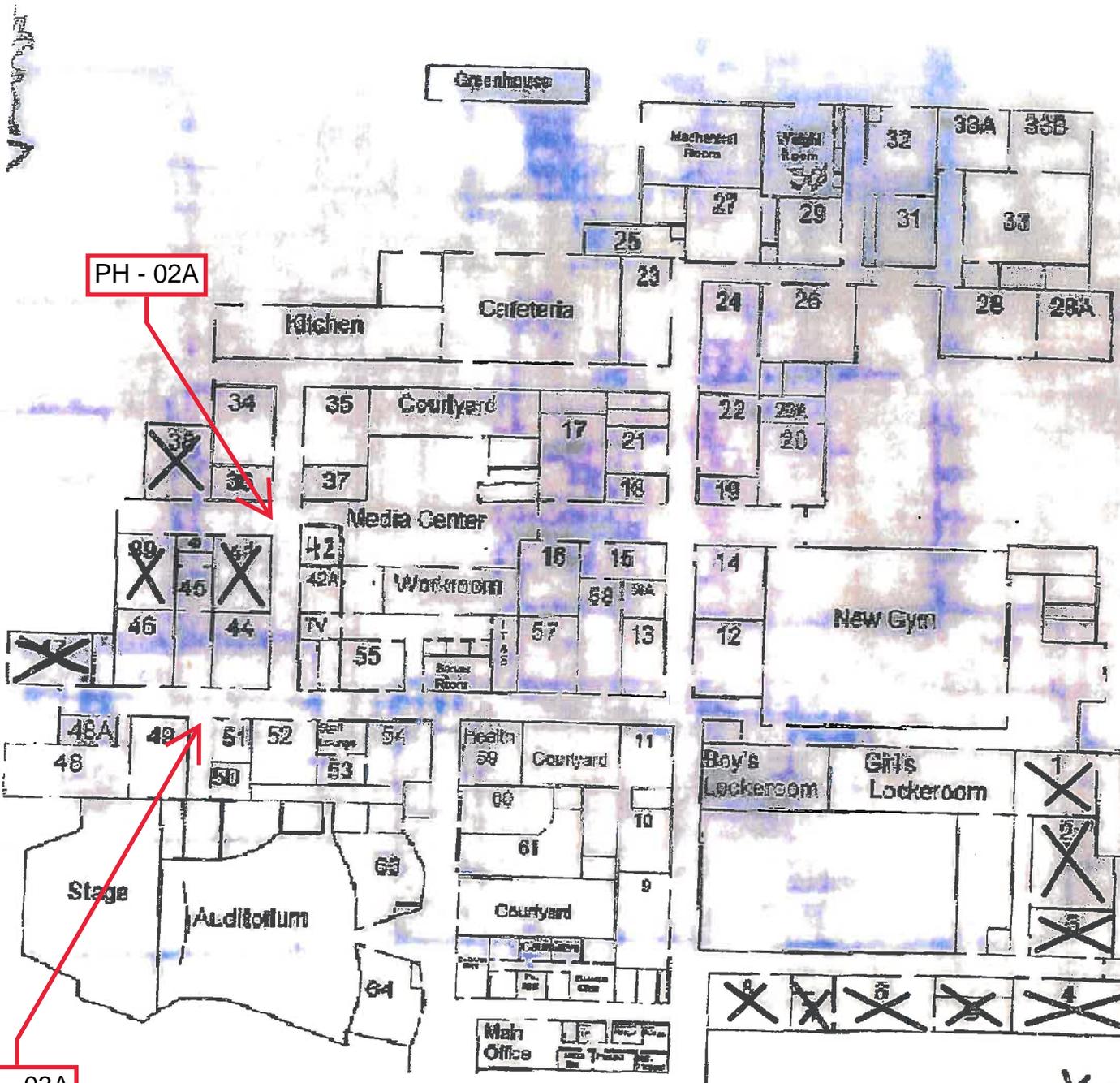
Sincerely,  
KCI Technologies, Inc



Jonathon S. Coale, CIH, CIEC  
Certified Industrial Hygienist  
KCI Technologies, Inc.

Attachment A: Sample Locations  
Attachment B: Laboratory Certificate of Analysis Report for Air Samples  
Attachment C: Photos of Current Barriers

**Attachment A:  
Sample  
Locations**



PH - 06A

P1	P6
P2	P7
P3	P8
P4	P9
P5	P10
Portables	

PH - 02A

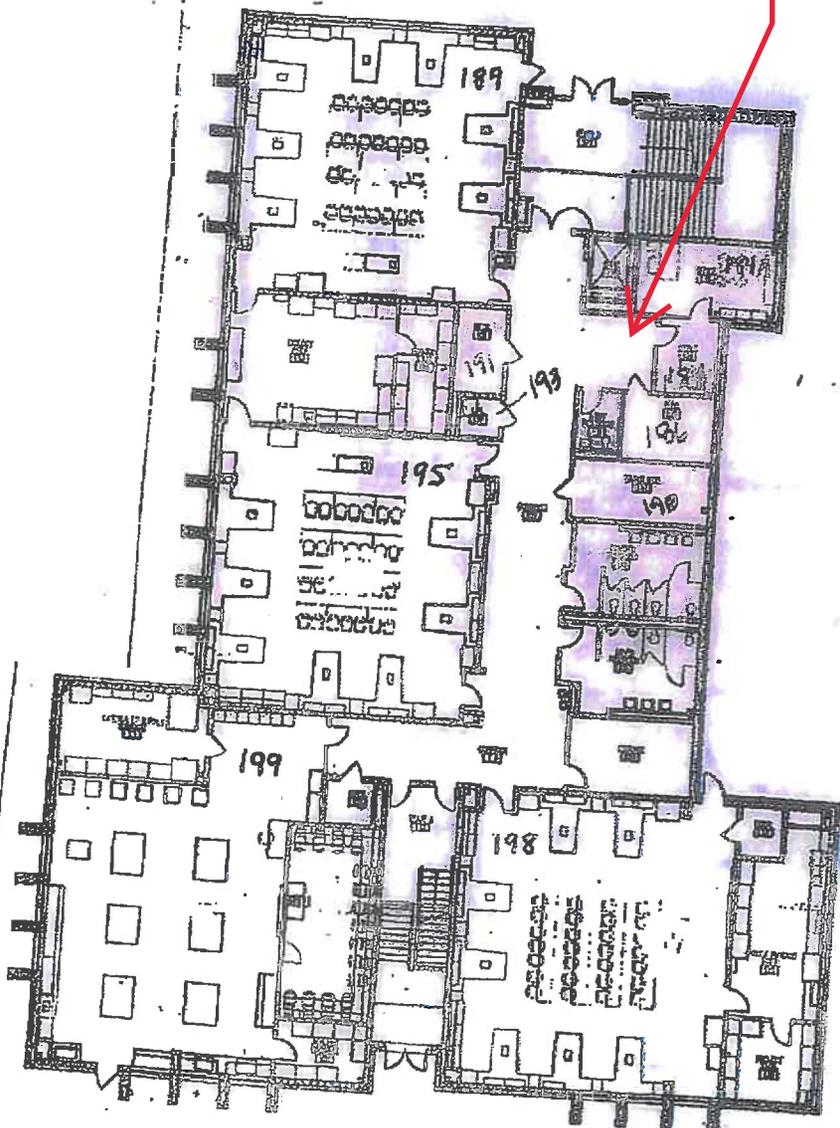
PH-01A

PH - 03A

X = Room not being used

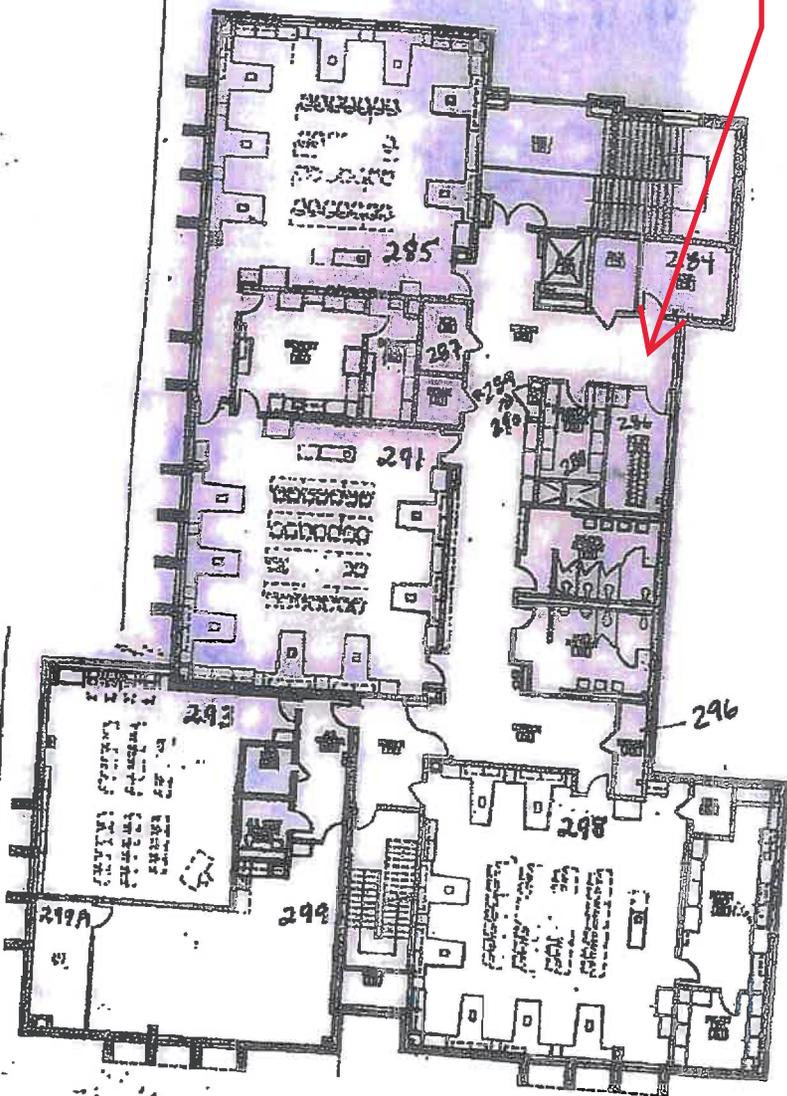
PH - 04A

PH - 05A



POOLESVILLE HIGH SCHOOL  
Science/Technology Addition

FIRST FLOOR



POOLESVILLE HIGH SCHOOL  
Science/Technology Addition

SECOND FLOOR

**Attachment B:**  
**Laboratory Certificate of Analysis Report for Air Samples**



**GALSON**

**Jon Coale  
KCI Technologies  
936 Ridgebrook Road  
Sparks Glencoe, MD 21152**

**April 28, 2023**

**Account# 17844**

**Login# L592054**

**Dear Jon Coale:**

**Enclosed are the analytical results for the samples received by our laboratory on April 21, 2023. All samples on the chain of custody were received in good condition unless otherwise noted. Any additional observations will be noted on the chain of custody.**

**Please contact client services at (888) 432-5227 if you would like any additional information regarding this report. Thank you for using SGS Galson.**

**Sincerely,**

**SGS Galson**

A handwritten signature in black ink that reads 'Lisa Swab'.

**Lisa Swab  
Laboratory Director**

**Enclosure(s)**



**Terms and Conditions & General Disclaimers**

- This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.
- Any holder of this document is advised that information contained herein reflects the Company’s findings at the time of its intervention only and within the limits of Client’s instructions, if any. The Company’s sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

**Analytical Disclaimers**

- Unless otherwise noted within the report, all quality control results associated with the samples were within established control limits or did not impact reported results.
- Note: The findings recorded within this report were drawn from analysis of the sample(s) provided to the laboratory by the Client (or a third party acting at the Client’s direction). The laboratory does not have control over the sampling process, including but not limited to the use of field equipment and collection media, as well as the sampling duration, collection volume or any other collection parameter used by the Client. The findings herein constitute no warranty of the sample's representativeness of any sampled environment, and strictly relate to the samples as they were presented to the laboratory. For recommended sampling collection parameters, please refer to the Sampling and Analysis Guide at [www.sgsgalson.com](http://www.sgsgalson.com).
- Unrounded results are carried through the calculations that yield the final result and the final result is rounded to the number of significant figures appropriate to the accuracy of the analytical method. Please note that results appearing in the columns preceding the final result column may have been rounded and therefore, if carried through the calculations, may not yield an identical final result to the one reported.
- The stated LOQs for each analyte represent the demonstrated LOQ concentrations prior to correction for desorption efficiency (if applicable).
- Unless otherwise noted within the report, results have not been blank corrected for any field blank or method blank data.

**Accreditations** SGS Galson holds a variety of accreditations and recognitions. Our quality management system conforms with the requirements of ISO/IEC 17025. Where applicable, samples may also be analyzed in accordance with the requirements of ELAP, NELAC, or LELAP under one of the state accrediting bodies listed below. Current Scopes of Accreditation can be viewed at <http://www.sgsgalson.com> in the accreditations section of the "About" page. To determine if the analyte tested falls under our scope of accreditation, please visit our website or call Client Services at (888) 432-5227.

National/International	Accreditation/Recognition	Lab ID#	Program/Sector
AIHA-LAP, LLC - IHLAP, ELLAP, EMLAP	ISO/IEC 17025 and USEPA NLLAP	Lab ID 100324	Industrial Hygiene, Environmental Lead, Environmental Microbiology

State	Accreditation/Recognition	Lab ID#	Program/Sector
New York (NYSDOH)	ELAP and NELAC (TNI)	Lab ID: 11626	Air Analysis, Solid and Hazardous Waste
Louisiana (LDEQ)	LELAP	Lab ID: 04083	Air Analysis, Solid Chemical Materials

**Legend**

< - Less than	mg - Milligrams	MDL - Method Detection Limit	ppb - Parts per Billion
> - Greater than	ug - Micrograms	NA - Not Applicable	ppm - Parts per Million
l - Liters	m3 - Cubic Meters	NS - Not Specified	ppbv - ppb Volume
LOQ - Limit of Quantitation	kg - Kilograms	ND - Not Detected	ppmv - ppm Volume
ft2 - Square Feet	cm2 - Square Centimeters	in2 - Square Inches	ng - Nanograms



# GALSON

## LABORATORY ANALYSIS REPORT

6601 Kirkville Road  
 East Syracuse, NY 13057  
 (315) 432-5227  
 FAX: (315) 437-0571  
 www.sgsgalson.com

Client : KCI Technologies  
 Site : MCPS  
 Project No. : POOLESVILLE HS  
 Date Sampled : 18-APR-23  
 Date Received : 21-APR-23

Account No.: 17844  
 Login No. : L592054  
 Date Analyzed : 27-APR-23  
 Report ID : 1355140

### Asphalt Fumes (Benzene-Soluble Fraction)

<u>Sample ID</u>	<u>Lab ID</u>	<u>Air Vol</u> <u>liter</u>	<u>Total</u> <u>mg</u>	<u>Conc</u> <u>mg/m3</u>
PH-FBA	L592054-1	NA	<0.10	NA
PH-LBA	L592054-2	NA	<0.10	NA
PH-01A	L592054-3	362	<0.10	<0.28
PH-02A	L592054-4	358	<0.10	<0.28
PH-03A	L592054-5	357	<0.10	<0.28
PH-04A	L592054-6	356	<0.10	<0.28
PH-05A	L592054-7	357	<0.10	<0.28
PH-06A	L592054-8	355	<0.10	<0.28

COMMENTS: Please see attached lab footnote report for any applicable footnotes.

Level of Quantitation: 0.10 mg  
 Analytical Method : mod. NIOSH 5042; Gravimetric  
 Collection Media : PTFE PW 1u 37mm

Submitted by: KGB  
 Date : 28-APR-23  
 Supervisor : JGC

Approved by: JGC



# GALSON

## LABORATORY FOOTNOTE REPORT

6601 Kirkville Road  
East Syracuse, NY 13057  
(315) 432-5227  
FAX: (315) 437-0571  
www.ssggalson.com

Client Name : KCI Technologies  
Site : MCPS  
Project No. : POOLESVILLE HS

Date Sampled : 18-APR-23  
Date Received: 21-APR-23  
Date Analyzed: 27-APR-23

Account No.: 17844  
Login No. : L592054

L592054 (Report ID: 1355140):

SOPs: ic-asphalt(26)  
BSF = Benzene Soluble Fraction

L592054 (Report ID: 1355140):

Accuracy and mean recovery data presented below is based on a 95% confidence interval (k=2). The estimated accuracy applies to the media, technology, and SOP referenced in this report and does not account for the uncertainty associated with the sampling process. The accuracy is based solely on spike recovery data from internal quality control samples. Where N/A appears below, insufficient data is available to provide statistical accuracy and mean recovery values for the associated analyte.

<u>Parameter</u>	<u>Accuracy</u>	<u>Mean Recovery</u>
Asphalt Fumes (Benzene-Soluble Fraction)	+/-15.7%	93%

L592054

134

# GALSON CHAIN OF CUSTODY



Turn Around Time (TAT):	(surcharge)	You may edit and complete this COC electronically by logging in to your Client Portal account at <a href="https://portal.galsonlabs.com/">https://portal.galsonlabs.com/</a>		
<input checked="" type="checkbox"/> Standard	0%	Client Acct No.: 17844	Report To: Jon Coale	Invoice To: Accounts Payable
<input type="checkbox"/> 4 Business Days	35%	Company Name: KCI Technologies	Address 1: 936 Ridgebrook Road	Company Name: KCI TECHNOLOGIES INC
<input type="checkbox"/> 3 Business Days	50%	Address 2:	Address 2:	Address 1: 936 Ridgebrook Road
<input type="checkbox"/> 2 Business Days	75%	Original Prep No.: PSY691761-1	City, State Zip: Sparks Glencoe, MD 21152	Address 2:
<input type="checkbox"/> Next Day by 6pm	100%	CS Rep: TLANCASTER	Phone No.: 410 - 891 - 1810	City, State Zip: Sparks, MD 21152
<input type="checkbox"/> Next Day by Noon	150%	Online COC No.: 268802	Cell No.:	Phone No.: 410 - 316 - 0818
<input type="checkbox"/> Same Day	200%	Comments:	Email reports to: Jonathan.Coale@kci.com	Email Address: ap@kci.com
<input type="checkbox"/> Samples submitted using the FreePumpLoan™ Program			Email EDD to: Jonathan.Coale@kci.com	Comments:
<input type="checkbox"/> Samples submitted using the FreeSamplingBadges™ Program				P.O. No.:
				Payment info.: <input type="checkbox"/> I will call SGS Galson to provide credit card info <input type="checkbox"/> Card on File (enter the last five digits on the line below)

Comments: Benzene Soluble only

State Sampled: MD

Please indicate which OEL(s) this data will be used for:  
 OSHA PEL  ACGIH TLV  MSHA  Cal OSHA  
 IAQ: \_\_\_\_\_  Other: \_\_\_\_\_  
 Specify Limit(s) Specify Other

Site Name: MCPS Project: Poolesville HS Sampled By: Tyler McClellan

List description of industry or Process/interferences present in sampling area: Roofing/Construction

Sample ID * (Maximum of 20 Characters)	Date Sampled *	Collection Medium	Sample Volume Sample Time Sample Area *	Liters Minutes in <sup>2</sup> , cm <sup>2</sup> , ft <sup>2</sup> *	Analysis Requested	Method Reference ^	Hexavalent Chromium Process (e.g., welding, plating, painting, etc.)
PH-FBA	4/18/23	37mm 1um PW PTFE, 2pc (black band)	NA	NA	Asphalt Fume (Benzene Soluble Fraction)	mod. NIOSH 5042; Gravimetric	
PH-LBA	4/18/23	37mm 1um PW PTFE, 2pc (black band)	NA	NA	Asphalt Fume (Benzene Soluble Fraction)	mod. NIOSH 5042; Gravimetric	

^ If the method(s) indicated on the COC are not our routine/preferred method(s), we will substitute our routine/preferred methods. If this is not acceptable, check here to have us contact you.

Chain of Custody	Print Name / Signature	Date	Time	Print Name / Signature	Date	Time
Relinquished By:	Tyler McClellan	4/18/23	14:45	ANA Ferreira	4/21/23	1509
Relinquished By:						

\* You must fill in these columns for any samples which you are submitting.  
 Samples received after 3pm will be considered as next day's business.

Online COC No.: 268802  
 Prep No.: PSY691761-1  
 Account No.: 17844  
 Draft: 3/31/2023 11:25:34 AM

All services are rendered in accordance with the applicable SGS General Conditions of Service accessible via: <http://www.sgs.com/en/Terms-and-Conditions.aspx>



**Attachment C:  
Photos of Current Barriers**



Photo 1: Auditorium Lobby (School Side)



Photo 2: Door to Construction Site Outside Room 13 (School Side)



Photo 3: Door to Construction Site Outside Room 13 (Construction Site Side)



Photo 4: Door to Construction Site Outside Room 12 (Construction Site Side)



Photo 5: Door to Girls Locker Room (Construction Side)



Photo 6: Door to Boys Locker Room (Construction Side)



Photo 7: Containment Outside Auditorium Lobby (Construction Side)



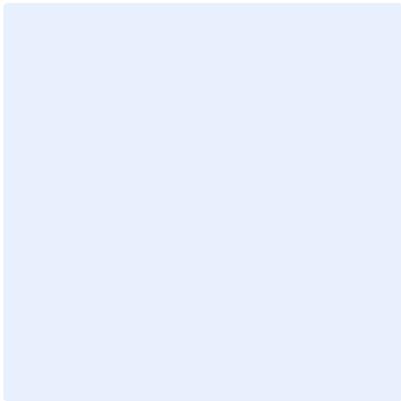
Photo 8: Door of Barrier-Auditorium Side (Construction Side)



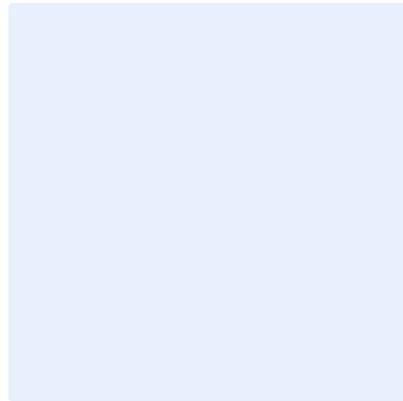
Photo 9: Door to Containment (Construction Side)



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